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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/079,039	02/20/2002	Zhihao Yang	82839SMR	6408

7590

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EXAMINER

SHAH, MANISH S

ART UNIT

PAPER NUMBER

2853

DATE MAILED: 02/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

DL

**Office Action Summary**

Application No.

10/079,039

Applicant(s)

YANG ET AL.

Examiner

Manish S. Shah

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 December 2002.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-12 and 14-20 is/are rejected.
- 7) ☒ Claim(s) 3 and 13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All   b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-2 & 7-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakamura et al. (# 6114411).

Nakamura et al. discloses the ink jet printing method comprising the liquid ink jet ink, which contains the thermally responsive material (thermoplastic resin) (column: 5, line: 35-40) and applying the liquid ink jet ink onto the ink jet recording element in an image wise fashion (column: 17, line: 15-32; column: 20, line: 10-40). They also disclose that the ink jet recording element has been heated to a temperature higher than the temperature of the liquid ink jet ink (column: 20, line: 45-67). They also disclose that the ink jet ink has viscosity less than about 10 centipoises (10 mPa.sec) at 25 °C (column: 16, line: 5-15). They also disclose that the thermally responsive material comprises a polyethylene oxide (column: 5, line: 40-65; column: 13, line: 5-15). They also disclose that ink containing about 0.2 to 20% of thermally responsive material (thermoplastic resin emulsion) and about 0.1 to 10% of colorant, wherein the colorant is pigment or dye (column: 3, line: 18-34; column: 15, line: 45-62). They also disclose that the ink jet recording element has been heated to temperature from 80 to 110 °C (column: 20, line: 62-67).

2. Claims 11-12 & 17-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakamura et al. (# 6114411).

Nakamura et al. discloses the ink jet printing method with controlled color bleed and coalescence (column: 22, line: 54-67; Table 6-7) comprising loading ink ejecting elements of a printer with liquid ink jet ink, which contains the thermally responsive material (thermoplastic resin) (column: 5, line: 35-40) and applying the liquid ink jet ink onto the ink jet recording element in an image wise fashion (column: 17, line: 15-32; column: 20, line: 10-40); loading the printer with an ink jet recording element, wherein the ink jet recording element has been heated to a temperature higher than the temperature of the liquid ink jet ink (column: 20, line: 45-67); and ejecting the liquid ink jet ink from the ink ejecting elements onto the heated ink jet recording element in response to digital data signals (column: 20, line: 10-67). They also disclose that the ink jet ink has viscosity less than about 10 centipoises (10 mPa.sec) at 25 °C (column: 16, line: 5-15). They also disclose that the thermally responsive material comprises a polyethylene oxide (column: 5, line: 40-65; column: 13, line: 5-15). They also disclose that in containing about 0.2 to 20% of thermally responsive material (thermoplastic resin emulsion) and about 0.1 to 10% of colorant, wherein the colorant is pigment or dye (column: 3, line: 18-34; column: 15, line: 45-62). They also disclose that the ink jet recording element has been heated to temperature from 80 to 110 °C (column: 20, line: 62-67).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 4-6 & 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. (# 6114411) in view of Gundlach et al. (# 5888285) and Takahashi et al. (# 3981730).

Nakamura et al. teaches all the limitation of the liquid ink jet ink except that: (1) the thermally responsive material comprises a polyethylene oxide containing block copolymer is tri-block copolymer of polyethylene oxide-polypropylene oxide-polyethylene oxide. (2) Thermally responsive material is a methylcellulose copolymer.

Gundlach et al. teaches that to get enhance the viscosity and the stability of the ink, the ink comprises a polyethylene oxide containing block copolymer is tri-block copolymer of polyethylene oxide-polypropylene oxide-polyethylene oxide (column: 17, line: 10-30).

It would have been obvious to one of ordinary skill in the art at the time of invention was made to incorporate the copolymer taught by Gundlach et al. in to the ink composition of Nakamura et al. because the presence of the copolymer in the ink is reduced or eliminate the inter color bleed when printed adjacent to another ink, and increase the stability of the ink.

Takahashi et al. teaches that to get the excellent hue separation in multi color printed image, the ink comprises a methylcellulose copolymer.

It would have been obvious to one of ordinary skill in the art at the time of invention was made to incorporate the copolymer taught by Takahashi et al. in to the ink composition of Nakamura et al. because the presence of copolymer in the ink reduces or eliminate the inter color bleed when printed adjacent to another ink, and due to that printed image have excellent hue separation.

#### ***Allowable Subject Matter***

4. Claims 3 & 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The ink jet ink has viscosity of less than 10 centipoises at 22 °C and viscosity of more than 1000 centipoises above its gel transition temperature.

#### ***Response to Arguments***

5. Applicant's arguments filed on 12/26/2002 have been fully considered but they are not persuasive.

Applicant argued that the Nakamura et al. didn't teach that ink contains the thermally responsive material, which is not persuasive, the term "thermally responsive

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materials” means any material that change the status like liquid to solid or solid to liquid as they heated, which is same as the thermoplastic resin emulsion. Applicant argued that in their invention thermally responsive material increases in viscosity as they heated and cause significantly higher viscosity in the ink, which cause the ink to form a non-fluidic gel. However, it is not claimed in the claimed invention. Applicant just claim that ink has thermally responsive material, so any kind of thermally responsive material can read on the claim subject matter.

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manish S. Shah whose telephone number is (703) 305-1562. The examiner can normally be reached on 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow, Jr. can be reached on (703) 308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 305-4900.



MSS  
January 28, 2003



LAMSON NGUYEN  
PRIMARY EXAMINER 01/30/03